PROCEEDINGS OF THE
ROYAL ENTOMOLOGICAL SOCIETY
OF LONDON

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ORDINARY MEETING

WEDNESDAY, 6th JUNE, at 5.30 p.m.

AGENDA.

1. Confirmation of the Proceedings of the Ordinary Meeting held on 2nd May, 1956.

2. Recommendations of candidates for Fellowship. First reading.

3. Recommendations of candidates for Fellowship. Second reading.

4. Announcement of election of new Fellows.

5. Additions to the Library [see p. 18].

6. Admission of Fellows.

7. Exhibits.

Fellows are particularly requested to bring suitable exhibits to the Meeting even though it may not be possible to announce their intention to do so beforehand.

> *Note.*—To avoid congestion in the Library and to enable exhibits to be displayed to greater advantage, a table has been placed in the meeting-room for this purpose. Fellows are asked to place their exhibits on this table, with a suitable explanatory note, as soon as possible on the afternoon of the meeting, so that they are available for inspection there before the meeting opens.

8. Communications.

1. **Dr. D. A. L. Davies** (a visitor).

The preservation of the structure of soft bodied insects and other animals by drying from the frozen state.

[ABSTRACT.]

When small animals which have a relatively rigid external skeleton are dried, their general form may remain substantially unchanged. Drying is frequently accompanied, however, by destruction of some pigments and this difficulty can be overcome, in part, by rapid drying *in vacuo.*

Soft bodied animals cannot be treated in this way because they burst and collapse when placed in a vacuum. If such specimens are frozen at — 60° C., they can then be dried from the frozen state. In this process the ice is removed in a high vacuum as water vapour, and the form and structure of the specimens remain unchanged.

Animals which live in a humid environment offer little resistance to the egress of water vapour and cooling due to vaporization maintains the frozen state until the specimens are dry. Those which live under drying conditions, however, have to be maintained below 0° C. throughout the drying process since vaporization is restricted by the integument and they would otherwise melt and collapse.

The technique of preservation by these methods will be described.

2. **Mr. P. Makings**

Some experiments on oviposition behaviour in the Lepidoptera.

[ABSTRACT.]

There has been little previous work in the Lepidoptera on the oviposition behaviour which is normally involved in the selection of an oviposition site and the factors which control the behaviour. The condition of readiness to lay seems to be associated with egg movement in the lower oviduct and initiates a pre-ovipositional activity which generally takes the form of a behaviour sequence of responses to particular environmental stimuli. Among these stimuli, factors other than olfaction are of importance not only in polyphagous species but also, as additional to olfaction, in monophagous species. Particular attention has been paid to these "other factors" and some of the experimental results will be described with reference to the normal oviposition of such species as *Diataraxia oleracea* Linn. and *Ephestia kühniella* Zeller.

TEA will be served in the Library before the meeting.

PROCEEDINGS OF THE ORDINARY MEETING HELD ON 2ND MAY, 1956

DR. W. J. HALL, C.M.G., M.C., President, in the Chair.

Present, 77 Fellows and 10 Visitors.

The minutes of the Ordinary Meeting held on 4th April were confirmed and signed by the President.

The names of the following candidates for election were read for the first time: Mr. Constantine Herbert Fernando; Mr. William James Knight, B.Sc.; Mr. Jeremy Bedford Russell; and Miss Kate Fraser Salmond.

For the second time (taken as read): Miss Ruth Mary Badcock, M.Sc.; Mr. Kuldip Rai Bhatia; Dr. Ewar Bursell; Dr. Jean L. Laffoon; Mr. Christopher Leclère Nissen; Mr. Anthony Kofi Opoku; Professor Shiva Shankar Prasad Sinha; Mr. Kuthanur Ayyaswami Swayamprakash; Mr. Hercules Johannes Viljoen, B.Sc.; Mr. Edward James Wilson; and Mr. Keith Arthur John Wise.

The Secretary read the names of the following newly elected Fellows of the Society: Dr. Monica Mary Betts, B.Sc., D.Phil., Corner Cottage, Mundford, Thetford, Norfolk; Mr. William Zacheus Coker, B.Sc., Medical Research Institute, P.O. Box 300, Accra, Gold Coast; Dr. Isaac Harpaz, M.Sc., Ph.D., 27 Chesterton Hall Crescent, Cambridge; Mr. Henry Theodore King, 21 Hunts Road, Stirchley, Birmingham 30; Mr. John Antony McFarlane, B.Sc., 75, Seward Road, Hanwell, London, W.7; Mr. Donald Martin Minter, B.Sc., Medical Research Laboratories, P.O. Box 141, Nairobi, Kenya; Dr. Surendra Deo Misra, Department of Biology, University of Saskatchewan, Saskatoon, Saskatchewan, Canada; Mr. Alan Arthur Savage, 31, Hessle View, Leeds, 6; Mr. Peter John Smart, 1, Laburnum Avenue, Queens Park, Bedford; Mr. Michael Richardson Smith, B.Sc., 50, Sedlescombe Road, Fulham, London, S.W.6.

Thanks were voted to donors of gifts to the Library since the last meeting.

Mr. W. Z. Coker, Mr. H. L. Kundu, Mr. D. S. Saunders, Mr. M. R. Smith and Dr. J. G. Thomas signed the Obligation Book and were admitted Fellows of the Society.

Dr. George Salt gave a paper on the ecology and entomology of Upper Kilimanjaro, an abstract of which appeared on page 10.

In the discussion which followed, the President enquired whether the insects at these high altitudes kept to small pockets of vegetation or whether there was some movement during the sharp temperature change between day and night. Dr. Salt replied that he had little definite information, but it must be assumed that the insects did emerge and move around to a limited extent.

Dr. van Emden having enquired if the exact temperature below the boulders was known, and whether it had been possible to breed the Anthomyiid which had been found in the rhachis of *Senecio*, Dr. Salt replied that the temperature under the boulders was probably a little higher than that on the surface, but still very low at night. It had not been possible to obtain adults of the Anthomyiid.

Mr. G. J. Kerrich asked whether insects blown up from lower altitudes were found dead on the snow, as he had observed in the Alps and in Lapland. Dr. Salt said he had found a *Charaxes*, alive but lethargic, on the snow at over 15,000 feet on Mount Speke in the Ruwenzori and that a Hesperiid normally occurring at 6–7,000 feet on Kilimanjaro was twice collected alive but moribund at over 12,000 feet.

Mr. H. L. Kundu asked whether any Elaterid larvae had been found at high altitudes and Dr. Salt replied that they had been found in soil samples taken at 6400 feet, but were not found in soil samples from 12,500 feet. Dr. Wilkinson enquired which species were found at the highest altitudes and particularly whether any spiders and Collembola were present. Dr. Salt replied that there was quite a variety of species including spiders, Collembola, the earwig *Forficula cavallii*, an Acridid and several beetles at 16,000 feet.

Mr. W. H. Potts having asked Dr. Salt to expand on flightlessness on these mountains and on oceanic islands, Dr. Salt remarked that the generally accepted explanation was that the species were fitted to live in a particular habitat and if winged were in danger of being blown away into an unsuitable habitat. There was some evidence that this explanation was not necessary and that the species were wingless because they were cryptozoic and did not need wings.

Professor O. W. Richards remarked that Sphaerocerid flies had an exceptional number of flightless species and it was certain that high mountain and wet forest species had a higher proportion of wingless forms. Dr. Salt said he would agree that flightlessness might occur where wings were a disadvantage, but would decry the facile way in which a mere suggestion by Darwin had been taken up and repeated as fact. More numerical data and statistical analysis were needed on this point.

Mr. D. Leston observed that there was some evidence that flightless forms were more cold-hardy and that winglessness was an adaptation to resist night temperatures. In dimorphic species of Gerridae wingless forms withstood the cold better.

Dr. E. C. Zimmerman said that in Hawaii flightless forms were common in insects which found their food close at hand.

In reply to an enquiry as to whether related species occurred on different mountain tops, suggesting parallel evolution, Dr. Salt said that botanists were agreed that there had been vicarious speciation on the high mountains of Africa but it was more difficult in the case of insects to assert that a given species was *not* present. Nevertheless in a few cases it seemed safe to conclude that distinct but related species occupied the different high mountains.

E. B. BRITTON, *Honorary Secretary.*

The next meeting will be held on 4th July, at 5.30 p.m.

ADDITIONS TO THE LIBRARY.

Presented.

Bechyne, Jan. *Beetles.* Trs. and ed. by C. M. F. Von Hayek. 8vo. London and New York, 1956. [*Open Air Guides.*] [Miss C. Von Hayek.]

Beirne, Bryan P. *An annotated and classified bibliography of Irish Entomology.* [Unpublished typescript.] [The Author.]

De Ong, E. R. *Insect, fungus and weed control.* 8vo. London (Thames & Hudson), 1953. [The Publishers.]

Forster, W., and Wholfahrt, T. A. *Die Schmetterlinge Mitteleuropas.* Lfg. 3–6. 4to. Stuttgart (Franckh'sche Verlagshandlung), 1952–55. [The Publishers.]

Purchased.

Kéler, Stefan Von. *Entomologisches Wörterbuch.* 8vo. Berlin. 1955. [*Wissenschaftliche Abhandlungen Nr.* 12.]

In addition, separates have been presented by Mr. M. Niblett; Mr. H. M. Hallett; United States Department of Agriculture; Smithsonian Institution; Mr. Curtis W. Sabrosky; Hon. Miriam Rothschild; Dr. I. Harpaz; Mr. P. T. Haskell; Dr. L. G. Higgins; Coconut Pest Research, Department of Agriculture, Zanzibar; Lt.-Col. R. Traub; Dr. A. N. Clements; Hope Department of Entomology, University of Oxford; Virus Research Institute, Entebbe; Director of the Cawthron Institute; Dr. E. McC. Callan; Miss D. J. Jackson; Mrs. D. M. S. Perkins and the Bee Department, Rothamsted Experimental Station.

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